Archæology is a branch which the Museum has always cultivated, and it made an honorable display at Madrid and Chicago. In the present report there is appended a lithograph of a remarkable monolithic inscription on the right bank of the Rio Colorado, province of Guanacaste. It displays two well-known conventional signs for 'man' surmounted by what seems to be the drawing of a tomahawk, and above this an elaborate figure, apparently of a house or other building. A photograph and exact measurements would be most desirable and are necessary for a proper study of the monument.

THE BORGIAN CODEX.

THIS valuable relic of ancient Mexican literature, deriving its name from Cardinal Borgia and preserved in the library of the Vatican, has been recently reproduced in fac-simile by the munificence of the Duc de Loubat. The copies are limited in number and most of them have been presented to institutions. The one I have seen is in the library of the Museum of the University of Pennsylvania.

The Codex makes a book 10¼ inches square, folded in the usual Mexican manner (like a screen), of 74 pages, and is apparently complete. Its contents appear to be the arrangement of the *tonalamatl*, in various sequences, for divining purposes. The grotesque collections of objects indicate the phonetic element of the picture writing, according to the 'ikonomatic' system.

The reproduction is most carefully executed and offers the student all the advantages of the original document.

A NEWLY-PUBLISHED AZTEC DOCUMENT.

DR. ANTONIO PEÑAFIEL, already well known for his publications on Mexican archæology, has begun the issue of a 'Collecion de Documentos para la Historia Mexicana,' with a reproduction, in colors, of the 'Mexican Manuscript, No. 4,' of the Royal Library of Berlin. It dates from after the Conquest, about 1539, with a text in Nahuatl and Spanish. The colored figures represent the names of places and of persons exhibited by that method of phonetic writing for which I have proposed the term 'ikonomatic' (see my 'Essays of an Americanist,' pp. 213–229). Dr. Peñafiel is not always successful in the analysis of these complex figures. Thus (p. 33) *Tepecoman* was not understood by the native artist as *tepetl*, town, and *comalli*, dish (as Dr. P. says, p. 73), but as *tepetl*, mountain; *co*, in; *maitl*, hand; so he drew the picture to represent a hand in, and coming out of, a mountain.

The publication is of much interest to archæologists, and it is earnestly to be hoped that the erudite editor will continue the series.

D. G. BRINTON.

UNIVERSITY OF PENNSYLVANIA.

SCIENTIFIC NOTES AND NEWS.

THE NATURALISTS AND AFFILIATED SOCIETIES.

THE program of the American Society of Naturalists to be held in New York on Wednesday and Thursday, December 28th and 29th, is as follows:

December 28th, at the American Museum of Natural History, at 8 p. m. Address of welcome by the President of the Museum, Morris K. Jesup, followed by a lecture on 'Collections of Fossil Mammals and their Care,' by Professor Henry F. Osborn. At 9:30 a reception to the Naturalists and Affiliated Societies, given by Professor Osborn at his house, No. 850 Madison avenue.

December 29th, at Schermerhorn Hall, Columbia University, 12:30-3 p. m., provision will be made for those members who wish to lunch at the University (West Hall). 2. p. m., business meeting of the Naturalists. At 3 the annual discussion on 'Advances in Methods of University Teaching,' by representatives of seven societies, the Anatomists, Anthropologists, Geologists, Botanical Morphologists, Animal Morphologists, Physiologists and Psychologists. At 6:30 an informal session of the Naturalists will be held, pending the annual dinner at 7.

On Friday, December 30th, an opportunity will be given for the members to visit the

Botanical and Zoological Gardens at Bronx Park, New York City. Detailed circulars will shortly be sent out to members by the Secretary of the Naturalists, Dr. H. C. Bumpus, Brown University, Providence, R. I. A local committee has been formed with Professor Osborn, as chairman.

ARRANGEMENTS will at once be made for the meetings of the affiliated societies. It may already be stated that the American Physiological Society and the American Psychological Association will meet on Wednesday, Thursday and Friday, and probably the same days will be chosen for the American Morphological Society, the Society for Plant Morphology and Physiology, and the Association of American Anatomists. The Section of Anthropology of the American Association will meet on Tuesday, followed on Wednesday by the American Folk-lore Society.

THE New York State Science Teachers' Association will, as we have already stated, hold its third annual meeting in New York, in conjunction with the Naturalists, on Thursday and Friday of Christmas week. The opening session will be at 10:30 a. m. on Thursday, and in the afternoon a discussion on science for admission to college will be opened by Professor Davenport, of Harvard University, followed by Professor Bailey, of Cornell University, and other speakers. In the evening the President, Professor Hargitt, of Syracuse University, will make an address, to be followed by a reception on Friday evening. The last session of the Association will be held in the American Museum of Natural History, where Dr. Bickmore will give an address and the exhibits will be opened.

THE GERMAN 'NATURFORSCHER UND AERZTE.'

THE seventieth Congress of German Men of Science and Physicians, under the Presidency of Professor Waldeyer, which met at Dusseldorf, beginning on September 19th, was attended by more than two thousand members. Three general addresses were given, an abstract of which we find in the *Naturwissenschaftliche Rundschau*. The first of these, by Professor Klein, the mathematician, discussed the relation of the German universities to the technical schools. He argued that the university should extend its laboratories and teaching to include technical studies, following here, it appears, the model of the American university. Applied science was further emphasized by the fact that one of the general addresses was for the first time on an engineering subject, and also by the fact that a section of applied mathematics and physics was organized. The third of the addresses was by Professor Tillmann, of Leipzig, on the progress of surgery during the past hundred years.

At the second general session addresses were made by Professor Martius on the causes of illness, in which he argued that the pathogenic microbes were not the true cause, but only the occasion, of illness. Dr. Mendelssohn spoke on the care of the sick and Professor Van't Hoff on the importance of inorganic chemistry. In addition to these two general sessions, there were held combined sessions devoted, respectively, to the sciences and to medicine. In the first of these Professor Krohn spoke on an engineering topic and Professor Pietzker on philosophy and science. Papers were presented before the second group by Professor von Frey, Professor Krehl and Professor Thoma on the heart and the circulation of the blood.

The place of meeting for next year is Munich, and Professor Neumayer, of Hamburg, the eminent meteorologist is President.

GENERAL.

THE fiftieth anniversary of the death of Berzelius has been celebrated at Stockholm by a memorial service, at which the King was present. Professor P. Th. Cleve, who holds the chair of chemistry at Upsala, delivered an oration.

DR. O. LOEW, known for his contributions to chemical physiology, has accepted an appointment under the U. S. Department of Agriculture.

THE International Congress of Mathematicians will meet in Paris from 6th to the 12th of August, 1900. The Mathematical Society of France has appointed committees of organization, M. Poincaré being President of that con-

cerned with scientific papers, and M. Darboux of that concerned with the other arrangements.

ON September 20th a general meeting of the German Botanical Society was held, in connection with the Congress of German Men of Science and Physicians. The session was chiefly devoted to memorial notices of members who had died during the preceding year. The record represented a heavy loss to botanical science.

THE annual general meeting of the London Mathematical Society will be held on November 10th. We learn from *Nature* that Lord Kelvin has acceded to the request of the Council, and will be nominated for the office of President. Professor H. Lamb, F.R.S., will be nominated for a Vice-Presidentship. Professor Elliott, F.R.S., has chosen, for the subject of his address, 'Some secondary needs and opportunities of English mathematicians.'

THE *Botanical Gazette* states that Mr. M. A. Carleton is now in Russia, as an agent of the U. S. Department of Agriculture, to study the cereals of the region.

MR. R. H. W. T. HUDSON, of St. Johns College, is this year senior wrangler at Cambridge University. The *Bulletin of the American Mathematical Society* calls attention to the fact that he is the son of Professor W. H. H. Hudson, professor of mathematics in King's College, London.

THE Royal College of Surgeons, of England, has awarded Drs. G. T. Brodie and Cartwright Wood £50 each from a research grant for their investigations. Dr. Brodie is at present engaged on the chemistry of diphtheria antitoxin, and Dr. Cartwright on diphtheria toxins and antitoxins and a method of examining water bacteriologically.

PROFESSOR FOSTER is giving this term at Cambridge University a course of lectures on the history of physiology. The first lecture of the course, given October 24th, was on Claude Bernard.

WE have to record the death of Dr. J. Crocq, professor of pathology in the University of Brussels and a member of the Belgian Senate; of Heinrich Theodor Richter, the metallurgist, lately Director of the School of Mines at Freiburg; of Dr. C. G. Gibeli, professor of botany and Director of the Botanical Institute at Turin; of the geographer Francisco Coello de Portugal, in Madrid, and of Dr. B. Kotula, known for his researches on the distribution of plants.

THE Civil Service Commission announces that on November 22, 1898, examinations will be held for the position of statistical field agent, U. S. Fish Commission. The chief subjects of the examination are commercial fisheries and the compilation of statistics. The salary is not given in the notice sent us. Vacancies in the grade of electrical engineer will be filled by examination, on December 3d. One of the vacant positions is in New York, with a salary of $1,800 per year. The other is at Fort Caswell, with a salary of $900.

THE International Otological Congress will meet in the Examination Hall of the Royal College of Surgeons, London, in August, 1898.

THE Eastern Association of Physics Teachers met in Boston on October 29th. The subject for special discussion was the relation of mathematics and physics in secondary schools, papers on which were presented by Professor A. B. Kimball and Dr. Levi L. Conant.

THE Council of the Institution of Civil Engineers of Great Britain have made the following awards, out of the trust funds at their disposal for the purpose, for original papers dealt with during the year 1897–98. The formal presentation took place at the Institution on Tuesday, November 1st, at 8 p. m.: Telford medals and premiums —A. H. Preece (London) and H. C. Stanley (Brisbane, Queensland); Watt medals and premiums—H. L. Callendar, M.A., F.R.S. (London), and J. T. Nicolson (Montreal, Canada); George Stephenson medals and premiums—Whately Eliot (Plymouth), W. O. E. Meade-King (London) and W. P. Marshall (Birmingham); the Crampton prize—E. W. Anderson (Erith); Telford premiums—L. B. Atkinson (Cardiff), Henry Fowler (Horwich), W. L. Strange (Bombay), F. J. Waring, C.M.G. (London), D. W. Brunton (Denver, U. S.), Wilfred Airy, M.A. (London), E. M. Bryant, B.Sc. (Newcastle-on-Tyne), D. B. Butler (London)

and H. V. Champion (Victoria); the James Forrest medal—W. L. Brown, M.Sc. (London); Miller prizes—C. E. Wolff, B.Sc. (Derby), A. D. Keigwin (Ashford), Harold Williams (Kingston), J. T. Morris (London), H. C. Adams (Birmingham), H. O. Eurich (Bradford), B. K. Adams (Colombo), A. B. E. Blackburn (Wednesbury), Thomas Carter (Newcastle), P. F. Story (Manchester), D. E. Lloyd-Davies (Bewdley) and Wilfred Hall, B.A. (Corbridge-on-Tyne).

At the meeting of the Entomological Society, London, on October 5th, Mr. R. Trimen, the President, announced that the late Mrs. Stainton had bequeathed to the Society such entomological works from her husband's library as were not already in its possession. This bequest was of great importance, and would add to the library a large number of works, many of which, formerly in the library of J. F. Stephens, were old and now scarce.

According to the *American Naturalist* the University of California has been presented by the Alaskan Commercial Company, of San Francisco, with the large and valuable collections which the Company has been accumulating for many years. The ethnological portion of the collection is especially rich and doubtless one of the best in existence. The collection also embraces fossil remains of mammoths and many skins and mounted specimens of birds, mammals and invertebrates of the Alaskan region.

The Anatomical Museum of Cambridge University has received from Professor Flinders Petrie a donation of 19 cases of skulls and bones from his excavations at Hierakonpolis, Egypt. This is the second donation of the kind received from him, and as these include the remains of the pre-historic and earliest dynastic races they are of great value. With this addition the collection of specimens of Egyptian anthropology is thoroughly representative, as it now consists of specimens which represent all the periods of Egyptian history from pre-historic times down to the Battle of Tel-el-Kebir.

The certified circulation of the libraries of New York City applying for public aid was last year 2,625,142 volumes; the libraries, without exception, showing an increase over the preceding year. The Astor and Lenox Libraries received, during the year ending June 30th, 27,800 new books, surpassing the accessions of the British Museum. The number of readers was 130,000, as compared with 180,000 in the British Museum.

Mr. John Corbett, formerly M.P. for Mid-Worcestershire, has offered to give £50,000 for founding and endowing a school of agriculture for sons of tenant farmers of the county of Worcestershire.

Mr. R. P. Cobbold, the English traveller, who was arrested in Bokhara by order of the Khan a short time ago, has returned, says the New York *Evening Post*, to Kashmir, having accomplished his journey to the Oxus. Unfortunately, he was obliged to throw away all his luggage, and has thus lost most of the scientific collection which was the primary object of his journey.

Captain Novitsky, of the Russian general staff, has returned from a journey through British India. Though the expedition was for political purposes, he brought back rich botanical and entomological collections, and made valuable meteorological observations.

The Vienna Academy of Sciences has, according to the *Athenæum*, chartered the Swedish steamer Gottfried for its projected scientific expedition to south Arabia. The ship is expected to arrive in a few days at Trieste, where the members of the expedition will go on board. The leader of the party is Count Carl Landberg, the Bavarian Orientalist, who has already spent several winters in the district. Dr. H. Müller proposes to devote his researches to the Sabæan inscriptions and the pre-Arabic archæology.

Three deaths have now resulted from infection with bubonic plague, contracted in the first instance in Professor Nothnagel's laboratory, where work was being done with cultures of the bacillus brought there from Bombay a year ago by the Austrian Commission. Men of science are fully aware of the danger from such experiments, but do not hesitate to risk their lives for the advancement of knowledge that may prove of inestimable value. The most serious aspect of the case is the evidence given of the susceptibility of Europeans to the plague. The dis-

ease contracted was of the pneumonic form, which is especially contagious and is usually fatal, but the possibility of its extension in Europe has unfortunately been demonstrated. This is not likely to occur at Vienna, where every precaution has been taken to isolate those infected and to destroy all cultures and animals under experiment. But the plague may at any time be imported from the present epidemic centers in India, and may obtain a foothold before it is detected. It will be remembered that the last epidemic of the 'black death' in Great Britain was the great plague of London, in 1665, when 70,000 persons died.

THE Indian government has determined to appoint a special commission, says the *British Medical Journal*, to consist of five members, to conduct investigations regarding the plague. The specific duty of the commission will be to inquire into the origin of the various outbreaks of the plague and the manner in which the disease is spread. An official statement also is required as to the efficacy of the serum treatment and the prevention of plague by means of inoculation. So far as the nominations on this commission have been made public, two Indian civilians, Messrs. J. R. Sewwett and A. Cumine, have already been appointed, but it is understood that three other members will be nominated by the Secretary of State for India to proceed from this country, of whom one will act as chairman, while two will be experts. There is plenty of work for the commission to do. Plague, as Dr. Simpson in his address at Edinburgh stated, has demonstrated the absolute necessity for a trained sanitary service for India, and, although the intended commission may work out the scientific bearings of the epidemic of plague, it must be remembered that plague is but one of the epidemics which ever threaten India. Plague is but an expression of the general insanitary state, and any governmental inquiry which does not deal with the general relief of the insanitation of India will but touch the fringe of the evil. A sanitary service, complete in all its branches, administrative, investigative and scientific, is required in India.

THE Harveian oration was delivered at the Royal College of Physicians on October 18th by Sir Dyce Duckworth. According to the report in the London *Times*, after urging the claims of the College to the consideration of generous benefactors, he pointed out that Harvey had definitely charged them to encourage research. What were greatly needed now in England were research laboratories attached to hospital wards and *post-mortem* theatres, and also a select staff of fully-trained investigators available for service throughout the Empire. It was surely humiliating that researches were permitted to be made for the public benefit in various parts of British territory by foreigners, while many of their countrymen and countrywomen, owing to ignorance and mawkish sentimentality, were doing their best to debar the training of such men in England. After alluding to the results of recent pathological research in regard to the preventive treatment of tuberculosis, Sir Dyce Duckworth observed that the Röntgen rays have as yet yielded little new information, and their therapeutic influence was not determined, but according to Rieder, of Munich, the rays emitted from high-vacuum tubes killed bacteria. The influence of glycerine in destroying some of the most noxious microbes which gained access to ordinary vaccine lymph was very noteworthy, and he could not but imagine that this agent might yet be found of more extended usefulness as a bactericide. Expressing his private opinion, though he believed it to be shared by the majority of those he addressed, he did not hesitate to stigmatize the recent Vaccination Act as a piece of panic legislation, a lamentable concession to ignorance, fraught with serious peril to the whole community, and unworthy of the duty and dignity of any British government. He closed with a brief appreciation of Harvey's chief scientific achievements, and of his great guiding principle, devotion to truth.

THE office of Regents of the University of the State of New York calls attention to the fact that the last few years of this century are witnessing greater activity in building and equipping medical schools than any other period. At no time in New York State history has so much been done as within the past few years to advance the interests of medical education. The advanced requirements for license, instead

of causing any hardship, have been accompanied by extraordinary growth in the property of New York medical schools. The report for 1897 showed an increase since 1893 of more than 100 per cent. in total property, and of nearly 100 per cent. in annual receipts. Since that time even this great increase has grown still larger, especially in Greater New York. The University and Bellevue Hospital Medical College has the fine new building erected in 1897 by the Faculty of the Bellevue Hospital Medical College. The College of Physicians and Surgeons, with the Vanderbilt Clinic, doubled in size by the additional gift in 1895 of $350,000, and the Sloan Maternity Hospital, greatly enlarged in 1897, now make the most complete plant in existence for scientific medical education. The Polhemus Memorial Clinic has been completed and thoroughly equipped since the last report, providing accommodations for the out-patient and medical school departments of the Long Island College Hospital. The intention of Mrs. Polhemus, that everything pertaining to the construction and equipment of this building should be of the most approved type, has certainly been carried out. Through the medical division of the Flower Hospital, opened in 1896, the New York Homeopathic Medical College now gives an excellent opportunity for the study of practical medicine. The New York Medical College and Hospital for Women has just opened its handsome new building in West 101st street. Last, but not least, $1,500,000, the greatest amount ever devoted by one person at one time to purposes of medical instruction, has just been given to build, equip and endow the new medical department of Cornell University in New York City.

The *Annales d'oculistique*, as quoted in the London *Times*, reports an important decision on 'Scientific Criticism of Proprietary Articles,' given in March last by the civil tribunal of the Department of Seine-Inférieure. The time during which an appeal might be lodged having elapsed, it has now become an expression of the French law upon the point. The question arose in an action for damages, to the extent of 20,000 francs, brought by a firm of opticians in Paris against Dr. Javal, the Director of the Ophthalmological Laboratory of the Sorbonne. The plaintiffs were the proprietors of a glass containing baryta, from which they manufacture spectacle lenses, which were described as 'isometropic,' and were extensively advertised as possessing special excellencies. Dr. Javal instructed two of his assistants, MM. Durault and Tscherning, to institute a careful examination of the glass and of the lenses made from it, and to report fully to him upon the subject. They carried out his instructions, and reported that the differences between baryta glass and ordinary glass were insignificant; that they were not in favor of the former, and that the 'isometropic' lenses did not offer any advantages to purchasers. Dr. Javal published this report by presenting it to the French Academy of Medicine, and hence the action. The Court decided that a scientific man might rightly examine and criticise, on public grounds, any manufactured article for which special merits were claimed, and they found for the defendant upon all the issues, condemning the plaintiff in costs. The decision has been received with much satisfaction by the medical profession in France, and the liberty thus secured is likely to be employed with reference to many pharmaceutical preparations and alleged remedies.

The Annual Congress of the Sanitary Institute of Great Britain was opened at Birmingham on September 17th with an attendance of 800 members. In his presidential address, as reported in the *British Medical Journal*, Sir Joseph Fayrer surveyed the progress of preventive medicine or hygiene during recent times. In bringing about that progress the Sanitary Institute had taken an important part. He described the conditions under which the people lived fifty years ago, and contrasted them with the present conditions. Upwards of 200 millions had been spent on sanitary work with great benefit to the public health. Popular teaching and example and the general diffusion of of education were still necessary in order to convince the proletariat of what so intimately concerned their vital interests. It would perhaps not be until the more complete organization of the public health administration under a Minister of Public Health were effected that the full benefits of sanitary legislation would be realized, and the people attain to that standard of health

and duration of life for which they had a right to hope. He showed the effect of hygienic measures upon certain well-known diseases, and with regard to vaccination he said the evidence seemed to show that there could be no doubt as to its value. As to the methods by which every individual was to be vaccinated or revaccinated, that was a subject for the State to determine. That the Acts in existence up to the present time were inadequate to this end was plainly shown by the fact that large and increasing numbers of the population were known to be unvaccinated, despite the compulsory character of the Acts. The most recent Vaccination Act, whatever might be its advantages, was certainly defective in this—that it made no provision for revaccination, the necessity for which was universally admitted by the medical profession, whilst it was very doubtful whether the modification of the compulsory clauses would have the effect, as it was hoped, of extending vaccination. The scope and aim of sanitary science in its preventive aspects should not be limited to the consideration of zymotic and other acute diseases, but should extend to the results of abnormal social conditions arising out of the strain and struggle for existence, involving over-competition in various occupations by which life was supported or wealth and distinction acquired, and under the pressure of which so many lost their health or even succumbed. He quoted from the Registrar-General's returns to show the influence exerted on vital statistics by sanitary science. He dwelt at some length upon the beneficial results of sanitary work in India, and concluded by saying that evidently a great future was before preventive medicine, and they might confidently look to the eminent men of science who were now pursuing with such indefatigable zeal their researches into the mysteries of bacteriology for its fulfillment. But those who admired and appreciated their work the most and looked forward hopefully to its results were anxious that progress should not be retarded by hasty deduction and premature generalization, which might only end in disappointment, however great might be the importance of the study of bacteriology and the various conclusions resulting from it.

UNIVERSITY AND EDUCATIONAL NEWS.

BY the will of the late Dr. Albert S. Hunt the sum of $30,000 was bequeathed to the Wesleyan Library as a permanent endowment fund. The University received also Dr. Hunt's own library of 5,000 volumes. Dr. Hunt was graduated from Wesleyan University in 1851.

MR. W. C. MACDONALD has given a further sum of over $25,000 to the electrical department of McGill University, Montreal.

TRINITY COLLEGE received a donation of $10,000 by the will of the late Nathan Warren, of New York.

AT the annual meeting of the Governors of University College, Liverpool, on October 15th, the Earl of Derby, President of the College, stated that the most pressing needs of the institution were a building for the department of physics and one for the department of human anatomy. The latter would cost about £20,000, and towards this sum the Earl of Derby subscribed at the time £5,000 on condition that the balance be collected. Mr. Ralph Brocklebank subscribed £2,000.

PRESIDENT SCHURMAN has presented his sixth annual report to the Board of Trustees of Cornell University. Reference is made to three important benefactions that we have already recorded; the gift of an infirmary, richly endowed; the establishment of a New York State College of Forestry, supported by the State and administered by the University; and the foundation of the Cornell Medical College, in New York City. The following figures are given concerning the financial affairs of the University:

Value of buildings and grounds	$1,796,372 86
Equipment of departments	1,135,308 12
Invested funds	6,446,818 21
Total property	9,378,499 19
Receipts from tuition	121,205 83
Total income	583,050 73
Total expenses	570,586 36
Salaries	286,185 72

The number of regularly enrolled students was 1,835.

THE registration in the various departments of the University of Michigan, on October 25th, is indicated in the following table. The cor-